

PATENT ABSTRACTS OF JAPAN

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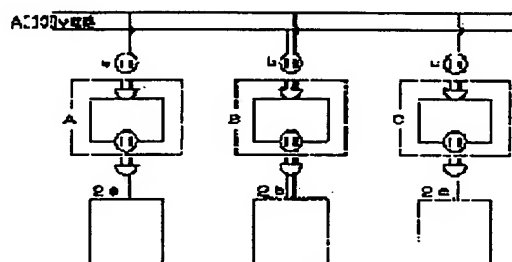
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(54) REMOTE AUTOMATIC POWER SUPPLY SWITCH

(57)Abstract:

PROBLEM TO BE SOLVED: To control the setting of the upper limit value of the specified current of each household, by giving a code for recognizing the relationship between a control device to which electric appliances of higher priority and a controlled device to which electric appliances of lower priority, and then controlling an output to the controlled electric appliance depending on the condition of a load current of the control electric appliance.

SOLUTION: A control appliance A and controlled appliance B, C are placed in an AC electric path having an upper limit of the current value to be used, a plurality of receptacles a, b, c and electric appliances 2a, 2b, 2c are connected in parallel and the control appliance A and controlled appliances B, C are provided between the receptacles a, b, c and electric appliances 2a, 2b, 2c. A code for recognizing relationship is given to the control appliance A connected with the electric appliance 2a of higher priority and controlled appliance B, C connected with the electric appliances 2b, 2c of lower priority. While a load current higher than the preset value is applied to the electric appliance 2a, it is detected by a current detecting means of the control appliance A in order to control an output to the electric appliances 2b, 2c.



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CLAIMS

[Claim(s)]

[Claim 1] It has a base phone and a slave, and a base phone and a slave are independent respectively, or it ****s and exists within one equipment. A base phone An input edge, an outgoing end, a current detection means, a starting current setting means, the code setting means, the DC-power-supply means, the control means, and the transmitting means are included. A slave An input edge, a closing motion means, an outgoing end, the code setting means, the DC-power-supply means, the control means, and the receiving means are included. A base phone and a slave In this cable run, two or more plug sockets and electric appliances are arranged in parallel in the inside of the alternating current cable run which has an upper limit in a working current value, and it connects. A base phone and a slave To the slave which connects a low electric appliance with the base phone which is installed between the plug socket and the electric appliance and connects an electric appliance with a high priority While using the load current beyond the predetermined set point for the electric appliance which gives the code mutually accepted to be a parentage and was connected to the base phone, That the current detection means of a base phone should detect this, and the output to the electric appliance linked to a slave should be suspended with this control means and transmitting means of a base phone The remote power-source switchgear characterized by receiving the signal for control to a cable run, receiving this signal for the receiving means of a sink and a slave, and opening and closing the output of a slave with the closing motion means of a slave.

[Claim 2] The remote power-source switchgear according to claim 1 characterized by adopting 1 time or one which carries out multiple-times sending out of methods in the equipment of claim 1 for the method with which the method of the signal transmission from the transmitting means of a base phone continues taking out a signal with a fixed time interval to the receiving means of a slave, and the stop signal to a slave.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the automatic power-source switchgear which suspends the input to an electric appliance with a low priority without the need for coincidence use by the case where the upper limit of a working current value is exceeded, when two or more electric appliances are connected into the alternating current cable run which has an upper limit in a working current value, and this electric appliance is used for coincidence.

[0002]

[Description of the Prior Art] Within alternating current cable runs, such as domestic, the upper limit of a working current value is set up with the breaker. Although power-saving per electric product is progressing these days, the current value used by domestic is increasing with the increment in home electronics, such as a computer. Although the upper limit of the working current is set up for every home by the agreement with an electric power company, if this value becomes high, a basic electricity bill will become high. then -- going -- hey, it tends to be made the low current set point -- although it comes out then, there is inconvenient nature which a current halt produces according to an overcurrent. A power receiving halt by this breaker actuation has also produced the trouble that the information inputted into the personal computer of these days, the word processor, etc. with much trouble will disappear. On the other hand, the technique of putting a RF signal in an alternating current cable run is applied to the various device, and is well-known. However, by putting a signal in an alternating current cable run, when exceeding the upper limit of a working current value, if an electric appliance is used for coincidence, the signal which suspends the input to an electric appliance with a low priority without the need for coincidence use is taken out from a base phone, and, therefore, the automatic power-source switchgear which prevents that an overcurrent flows in an alternating current cable run does not exist in receiving this signal to a slave until now.

[0003]

[Problem(s) to be Solved by the Invention] The technical problem of this invention should hold down this set point, although the upper limit of the working current is set up for every home by the agreement with an electric power company. Cut the input to the direction of a device with the low inner priority of a device coincidence in use, maintain the input to a device with a high priority, and make low a total home inside installation constant value. Stop a basic electricity bill low. If the information inputted into the personal computer, the word processor, etc. with much trouble disappears without a current halt arising according to an overcurrent, there need to be nothings. When two or more electric appliances are connected into the alternating current cable run which has an upper limit in a working current value, and this electric appliance is used for coincidence, it is suspending the input to an electric appliance with a low priority without the need for coincidence use by the case the upper limit of a working current value being exceeded etc.

[0004]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, this invention was constituted as follows. This equipment has a base phone and a slave, and a base phone and a slave are independent respectively, or it ****s and exists within one equipment. Namely, a base phone An input edge, an outgoing end, a current detection means, a starting current setting means, the code setting means, the DC-power-supply means, the control means, and the transmitting means are included. A slave An input edge, a closing motion means, an outgoing end, the code setting means, the DC-power-supply means, the control means, and the receiving means are included. A base phone and a slave In this cable run, two or more plug sockets and electric appliances are arranged in parallel in the inside of the alternating current cable run which has an upper limit in a working current value, and it connects. To the slave which connects a low electric appliance with the base phone which the base phone and the slave are installed between the plug socket and the electric appliance, and connects an electric appliance with a high priority While using the load current beyond the predetermined set point for the electric appliance which gives the code mutually accepted to be a parentage, among those was connected to the base phone, That the current detection means of a base phone should detect this, and the output to the electric appliance linked to a slave should be suspended with this control means, output modulation, and transmitting means of a base phone It is the remote power-source switchgear which receives the signal for control to a cable run, receives this signal for the receiving means of a sink and a slave, and opens and closes the output of a slave with the closing motion means of a slave.

[0005]

[Embodiment of the Invention] In this invention, bottom two or more mutually-independent parents and children's group is allotted on the same cable run by giving the code which accepts an electric appliance with a high priority, and the low electric appliance of each other to be parentages. As a code, well-known means, such as a number selector, can be used, for example. When it considers as 1 figure of denary as the address, parents are set to 5 and a child is set to 5. In considering as 4 figures of denary, it considers as parents 1021 and a child 1021. In this invention, it comes out enough by the number of about 4 figures of decimals, and although it is practical, it is not limited to this.

[0006] Priority can also be set up by giving the code similarly accepted to be a parentage mutually among two or more children.

Exchange of parent and child is also possible at easy actuation. Furthermore, a base phone and a slave can merge, one equipment can be formed, and within the equipment, a base phone and a slave can also be constituted so that it may have a mutually different code.

[0007] Next, in this invention, 1 time or one which carries out multiple-times sending out of methods can also adopt the method which continues taking out a signal with a fixed time interval to the receiving means of a slave, and the stop signal to a slave as a signal transmitting method from the transmitting means of a base phone. Although a RF signal can be used as a signal, it is not limited to this. Moreover, it is also possible to put a modulation means into a transmitting side and to put a recovery means into a receiving side.

[0008]

[Example] Although this invention is explained to a detail with reference to a drawing below, these are one for explaining this invention, and do not limit the range of this invention. Drawing 1 is the block diagram of a base phone among the equipment of one

example of this invention. The base phone concerning this invention consists of an input edge, an outgoing end, a current detection means, a starting power setting means, the address code setting means, a DC-power-supply means, a control means, and a transmitting means to an alternating-current-power path. Transmission took the modulation technique. The specification of a base phone is as follows.

Input voltage 100V 50/60Hz load-carrying capacity 1500VA starting current 5A subcarrier 100kHz 50mW [0009] Drawing 2 is the block diagram of a slave among the equipment of the example of this invention. The slave concerning this invention consists of an input edge, an outgoing end, the address code setting means, a DC-power-supply means, a control means, and a receiving means. The use of a slave is as follows.

Input voltage 100V 50/60Hz load-carrying capacity 1500VA [0010] Drawing 3 is the cable run Fig. of one example of this invention. a, b, and c are the plug sockets arranged in a cable run, and A is the aforementioned base phone and the slave of the above [B and C]. And 2a is the first electric appliance of a priority, and 2b and 2c are electric appliances with the low priority which may be removed when using electric appliance 2a.

[0011] The actuation of this power-source switchgear which consists of the above configuration is as follows.

Example 1 of a method The starting current value is beforehand set as 5A by continuation signal system (1) drawing 1 . Moreover, the address of a base phone is beforehand determined as 1021 with the address code setting means of a base phone.

(2) The current detection means of a base phone detects the current more than default value 5A.

(3) With output modulation / transmitting means of a base phone, taking out a signal with a fixed time interval is continued.

(4) A signal is received by the receiving means through an input means through the plug socket (b) of the slave (B) of propagation and drawing 2 in AC100V cable run by drawing 3 . The address code of a slave has set the address of a slave to 1021 beforehand with the address code setting means.

(5) With the relay closing motion means of a slave, while having received the output to an electric appliance (b") with the fixed time interval, stop.

[0012] example 2 of a method the stop instruction signal to a set-reset method (3) slave -- 1 time -- or two or more transfer appearance is carried out.

(5) Suspend an output in response to a stop instruction signal.

(6) It is 1 time or multiple-times sending out about a restart instruction signal to a slave.

(7) and (6) are received and it resumes.

[0013] Drawing 4 is the example of a design of the address of a parent-and-child machine. A base phone sets a starting current value as (1)5A, (2)8A, and two steps, when designing that a slave B1 should operate by (1) or (2), and actuation and slave B-2 should operate by (2), the address by the side of a base phone is set to 1500, and 1501 and slave B-2 are set to 1502 for a slave B1.

[0014] Similarly, in drawing 4 (a), A gives priority to B1 and B-2, and acts on them. In drawing 4 (b), A acts on B1 and B-2 at coincidence. A1 or A2 acts on B in drawing 4 (c). A1 or A2 acts on B in drawing 4 (d). In drawing 4 (e), A1 acts on B1, A2 acts on B-2 and an operation and A3 act on B3.

[Effect of the Invention] Since the input to an electric appliance with a low priority without the need for coincidence use can be suspended by the case where the upper limit of a working current value is exceeded if this electric appliance is used for coincidence when two or more electric appliances are connected into alternating current cable runs, such as a home where this invention has an upper limit in a working current value as above, it has the following effectiveness. That is, it becomes possible to hold down the set point to which the upper limit of the working current is set for every home by the agreement with an electric power company.

Moreover, the input to the direction of a device with the low inner priority of a device coincidence in use can be cut, and the input to a device with a high priority can be maintained. Priority can also be set up by giving the code (address code) mutually accepted to be a parentage also among two or more slaves. Exchange of parent and child is also possible at easy actuation. And a total home inside installation constant value can be made low. Consequently, the basic electricity bill from an electric power company can be stopped low. Moreover, it is not said that the information inputted into the personal computer, the word processor, etc. with much trouble, without a current halt arising according to an overcurrent will disappear.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The block diagram of the base phone of one example of this invention

[Drawing 2] The block diagram of the slave of one example of this invention

[Drawing 3] The cable run Fig. of one example of this invention

[Drawing 4] The example of a design of the address code of one example of this invention

[Description of Notations]

a, b, c Plug socket

A, A1, A2, A3 Base phone

B, B1, B-2, B3, C1, C2, C3 Slave

2a The first electric appliance of a priority

2b, 2c Electric appliance which may be erased when using 2a

P, Q The starting current set point at the time of considering as a two-step setup

[Translation done.]

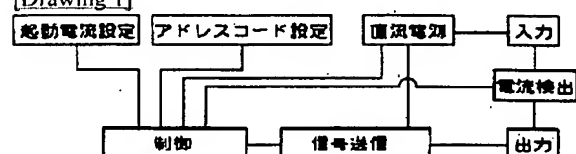
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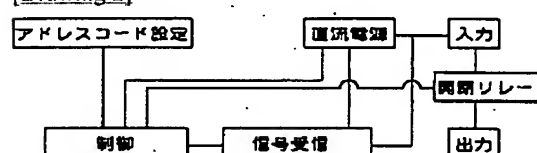
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DRAWINGS

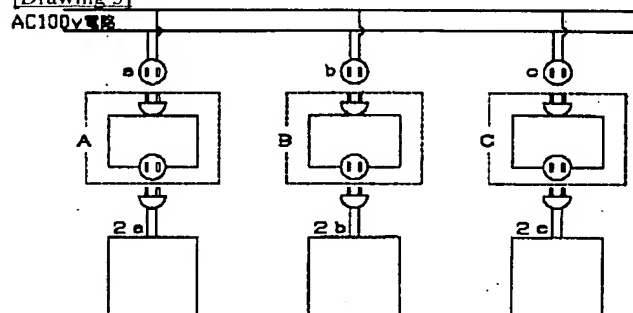
[Drawing 1]



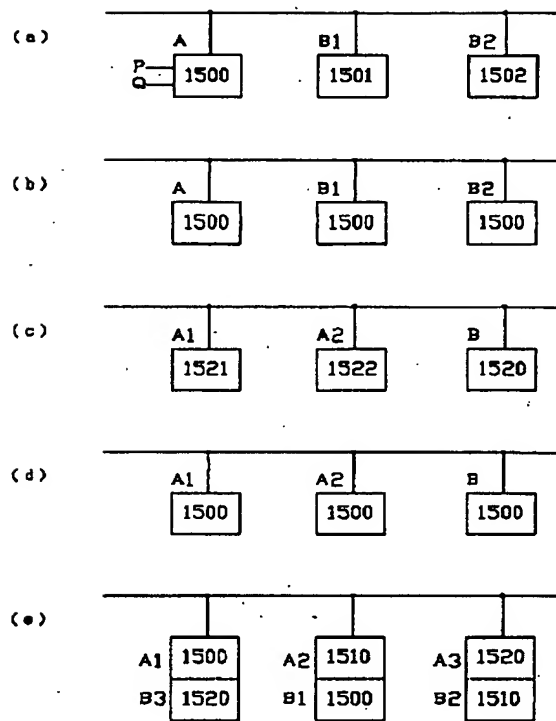
[Drawing 2]



[Drawing 3]



[Drawing 4]



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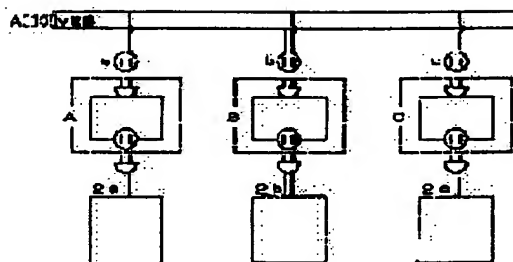
Priority country : JP

(54) REMOTE AUTOMATIC POWER SUPPLY SWITCH

(57)Abstract:

PROBLEM TO BE SOLVED: To control the setting of the upper limit value of the specified current of each household, by giving a code for recognizing the relationship between a control device to which electric appliances of higher priority and a controlled device to which electric appliances of lower priority, and then controlling an output to the controlled electric appliance depending on the condition of a load current of the control electric appliance.

SOLUTION: A control appliance A and controlled appliance B, C are placed in an AC electric path having an upper limit of the current value to be used, a plurality of receptacles a, b, c and electric appliances 2a, 2b, 2c are connected in parallel and the control appliance A and controlled appliances B, C are provided between the receptacles a, b, c and electric appliances 2a, 2b, 2c. A code for recognizing relationship is given to the control appliance A connected with the electric appliance 2a of higher priority and controlled appliance B, C connected with the electric appliances 2b, 2c of lower priority. While a load current higher than the preset value is applied to the electric appliance 2a, it is detected by a current detecting means of the control appliance A in order to control an output to the electric appliances 2b, 2c.



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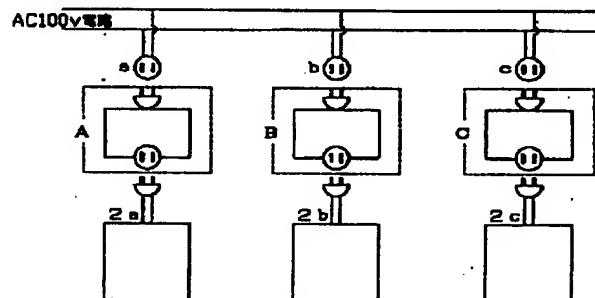
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(54)【発明の名称】 遠隔自動電源開閉装置

(57)【要約】 (修正有)

【課題】 同時使用中の機器の内、優先度の低い機器の方への入力を切り、優先度の高い機器への入力を維持する。トータルの家庭内設定値を低くする。その結果、電力会社からの基本電気料金を低く抑える。

【解決手段】 (a) 該親機と子機は、使用電流値に上限のある交流電路内におかれ、該電路内には複数のコンセント及び電気器具が並列して接続されており、(b) 優先度の高い電気器具と低い電気器具とに、互いに親子関係と認める暗号(アドレスコード)を付与しておき、(c) その内、一の電気器具に所定の設定値以上の負荷電流を使用している間、親機の直流検出手段によりこれを検出し、他の一の電気器具への出力を停止すべく、親機の該制御手段及び送信手段によって、制御用の信号を電路に流し、(d) 子機を受信手段に該信号を受信し、出力を開閉する手段からなる遠隔電源開閉装置。



【特許請求の範囲】

【請求項1】親器と子器とを有し、親器と子器はそれぞれ独立で、又はひとつの装置内で併存して存在し、親器は、入力端、出力端、電流検出手段、起動電流設定手段、暗号設定手段、直流電源手段、制御手段及び送信手段を含んでおり、子器は、入力端、開閉手段、出力端、暗号設定手段、直流電源手段、制御手段及び受信手段を含んでおり、親器と子器は、使用電流値に上限のある交流電路内におかれ、該電路内には複数のコンセント及び電気器具が並列して接続されており、親器と子器は、コンセントと電気器具との間に設置されており、優先度の高い電気器具を接続する親器と低い電気器具を接続する子器とに、互いに親子関係と認める暗号を付与しておき、親器に接続した電気器具に所定の設定値以上の負荷電流を使用している間、親器の電流検出手段によりこれを検出し、子器に接続した電気器具への出力を停止すべく、親器の該制御手段及び送信手段によって、制御用の信号を電路に流し、子器の受信手段に該信号を受信し、子器の開閉手段により子器の出力を開閉することを特徴とする遠隔電源開閉装置。

【請求項2】請求項1の装置において、親器の送信手段からの信号送信の方式が、一定時間間隔で信号を子器の受信手段に出し続ける方式と、子器への停止信号を1回又は複数回送出するいずれかの方式を採用することを特徴とする請求項1記載の遠隔電源開閉装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、使用電流値に上限のある交流電路内において、複数の電気器具を接続している場合、該電気器具を同時に使用すると使用電流値の上限を超える場合で、同時使用の必要がない優先度の低い電気器具への入力を停止する自動電源開閉装置に関する。

【0002】

【従来の技術】家庭内等の交流電路内では、ブレーカーによって、使用電流値の上限が設定されている。昨今、電気製品1個当たりの省電力化が進んでいるが、家庭内で使用される電流値は、コンピュータ等家電製品の増加に伴い増加傾向にある。1家庭毎に電力会社との取り決めによって使用電流の上限が設定されているが、この値が高くなれば、基本電気料金が高くなる。そこで、いきおい、低い電流設定値にしがちであるが、そうすれば、過電流により電流停止が生じる不便性がある。このブレーカー作動による受電停止は、昨今のパソコン、ワープロ等にせきかく入力した情報が消えてしまうという問題点も生じている。他方、交流電路内に高周波信号を乗せる技術は、多方面の機器に応用されており公知である。しかしながら、電気器具を同時に使用すると使用電流値の上限を超える場合に、交流電路内に信号を乗せることによって、同時使用の必要がない優先度の低い電気器具へ

の入力を停止する信号を親器から出し、この信号を子器に受信することによって、交流電路内に過電流が流れることを防止する自動電源開閉装置はこれまで存在しない。

【0003】

【発明が解決しようとする課題】本発明の課題は、1家庭毎に電力会社との取り決めによって使用電流の上限が設定されているが、この設定値を抑えること。同時使用中の機器の内優先度の低い機器の方への入力を切り、優先度の高い機器への入力を維持して、トータルの家庭内設定値を低くすること。基本電気料金を低く抑えること。過電流により電流停止が生じることなくパソコン、ワープロ等にせきかく入力した情報が消えてしまうことがないこと。使用電流値に上限のある交流電路内において、複数の電気器具を接続している場合、該電気器具を同時に使用すると使用電流値の上限を超える場合で、同時使用の必要がない優先度の低い電気器具への入力を停止すること等である。

【0004】

【課題を解決するための手段】上記課題を解決するために、本発明を以下のとおり構成した。即ち、本装置は、親器と子器とを有し、親器と子器はそれぞれ独立で、又はひとつの装置内で併存して存在し、親器は、入力端、出力端、電流検出手段、起動電流設定手段、暗号設定手段、直流電源手段、制御手段及び送信手段を含んでおり、子器は、入力端、開閉手段、出力端、暗号設定手段、直流電源手段、制御手段及び受信手段を含んでおり、親器と子器は、使用電流値に上限のある交流電路内におかれ、該電路内には複数のコンセント及び電気器具が並列して接続されており、親器及び子器はコンセントと電気器具との間に設置されており、優先度の高い電気器具を接続する親器と低い電気器具を接続する子器とに、互いに親子関係と認める暗号を付与しておき、その内、親器に接続した電気器具に所定の設定値以上の負荷電流を使用している間、親器の電流検出手段によりこれを検出し、子器に接続した電気器具への出力を停止すべく、親器の該制御手段、出力変調及び送信手段によって、制御用の信号を電路に流し、子器の受信手段に該信号を受信し、子器の開閉手段により子器の出力を開閉する遠隔電源開閉装置である。

【0005】

【発明の実施の形態】本発明では、優先度の高い電気器具と低い電気器具とを、互いに親子関係と認める暗号を、付与することによって、同一電路上に互いに独立した複数の親子の組を配する。暗号としては、例えば、番号セレクタ等の公知の手段が使用できる。アドレスとしては例えば、十進1ケタとした場合、親を5、子を5とする。十進4ケタとする場合には例えば、親1021、子1021とする。本発明においては、10進4ケタ程度の番号にて十分で実用的であるが、これに限定される

ものではない。

【0006】同様にして複数の子間にも互いに親子関係と認める暗号を付与することによって、優先順位を設定することもできる。親子の交換も簡単な操作で可能である。さらに、親器と子器とが併合して一つの装置を形成し、その装置内で、親器と子器とは互いに異なる暗号を持つように構成することもできる。

【0007】次に、本発明においては、親器の送信手段からの信号送信方式として、一定時間間隔で信号を子器の受信手段に出し続ける方式と、子器への停止信号を1回又は複数回送出するいずれかの方式も採用することができる。信号としては高周波信号を使用することができるが、これに限定されるものではない。また、送信側に、変調手段を受信側に復調手段をいれることも可能である。

【0008】

【実施例】以下図面を参照して本発明を詳細に説明するが、これらは本発明を説明するための1例であって、本発明の範囲を限定するものではない。図1は、本発明の一実施例の装置の内、親器のブロック図である。本発明に係る親器は、入力端、出力端、電流検出手段、起動電力設定手段、アドレスコード設定手段、直流電源手段、制御手段、交流電力経路への送信手段から構成されている。送信は変調方式をとった。親器の仕様は次の通りである。

入力電圧 100V 50/60Hz

負荷容量 1500VA

起動電流 5A

搬送波 100kHz 50mW

【0009】図2は、本発明の実施例の装置の内、子器のブロック図である。本発明に係る子器は、入力端、出力端、アドレスコード設定手段、直流電源手段、制御手段及び受信手段から構成されている。子器の使用は次の通りである。

入力電圧 100V 50/60Hz

負荷容量 1500VA

【0010】図3は、本発明の一実施例の電路図である。a, b, cは電路内に配置されたコンセントで、Aが前記の親器、B及びCは前記の子器である。そして、2aが、優先度第一の電気器具で、2b及び2cは電気器具2aを使用するとき消されても良い優先度の低い電気器具である。

【0011】以上の構成からなる本電源開閉装置の動作は次のとおりである。

方式例1 継続信号方式

(1) 図1で予め起動電流値を5Aに設定しておく。また、親器のアドレスコード設定手段により親器のアドレスを1021と予め定めておく。

(2) 親器の電流検出手段が規定値5A以上の電流を検出する。

(3) 親器の出力変調/送信手段により、一定時間間隔で信号を出しつづける。

(4) 信号は図3でAC100V電路を伝わり、図2の子器(B)のコンセント(b)を経て、入力手段を経て、受信手段で受信される。子器のアドレスコードは、アドレスコード設定手段により子器のアドレスを予め1021としている。

(5) 子器のリレー開閉手段により、電気器具(b'')への出力を一定時間間隔で受信している間停止する。

【0012】方式例2 セット・リセット方式

(3) 子器への停止命令信号を1回又は複数回送出する。

(5) 停止命令信号を受け、出力を停止する。

(6) 子器へ再開命令信号を1回又は複数回送出。

(7) (6)を受信し再開する。

【0013】図4は、親子器のアドレスの設計例である。親器が起動電流値を(1)5A、(2)8Aと2段に設定し、子器B1が(1)又は(2)で作動、子器B2が(2)のみで作動すべく設計する場合、親器側のアドレスを例えば1500、子器B1を1501、子器B2を1502とする。

【0014】同様に、図4(a)では、Aは、B1、B2に優先順位をつけて作用する。図4(b)では、Aは、B1、B2に同時に作用する。図4(c)では、A1又はA2が、Bに作用する。図4(d)では、A1又はA2が、Bに作用する。図4(e)では、A1は、B1に作用し、A2はB2に作用、A3はB3に作用する。

【発明の効果】以上のとおり、本発明は、使用電流値に上限のある家庭等の交流電路内において、複数の電気器具を接続している場合、該電気器具を同時に使用すると使用電流値の上限を超える場合で、同時使用の必要がない優先度の低い電気器具への入力を停止することができるので、次の効果を有する。即ち、1家庭毎に電力会社との取り決めによって使用電流の上限が設定されている設定値を抑えることが可能となる。また、同時使用中の機器の内優先度の低い機器の方への入力を切り、優先度の高い機器への入力を維持することができる。複数の子器間にも互いに親子関係と認める暗号(アドレスコード)を付与することによって、優先順位を設定することもできる。親子の交換も簡単な操作で可能である。そして、トータルの家庭内設定値を低くすることができる。その結果、電力会社からの基本電気料金を低く抑えることができる。また、過電流により電流停止が生じることなくパソコン、ワープロ等にせっかく入力した情報が消えてしまうということがない。

【図面の簡単な説明】

【図1】本発明の一実施例の親器のブロック図

【図2】本発明の一実施例の子器のブロック図

【図3】本発明の一実施例の電路図

【図4】本発明の一実施例のアドレスコードの設計例
【符号の説明】

a, b, c コンセント

A, A1, A2, A3 親器

B, B1, B2, B3, C1, C2, C3 子器

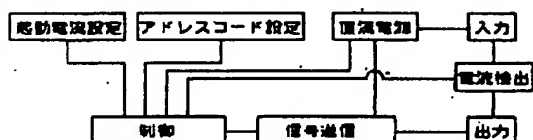
*

* 2 a 優先度第一の電気器具

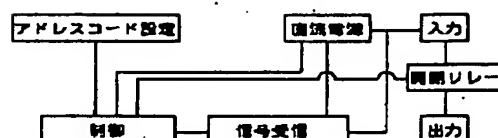
2 b, 2 c 2 aを使用するとき消されてもよい電気器具

P, Q 2段階設定とした場合の起動電流設定値

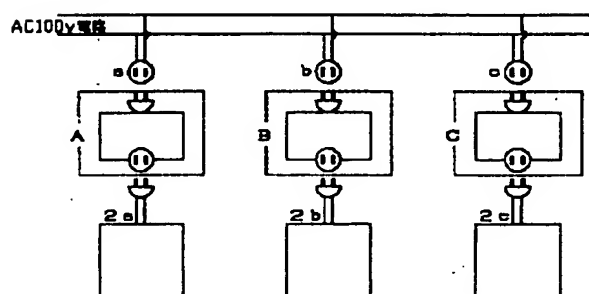
【図1】



【図2】



【図3】



【図4】

